

Boiler MACT Overview:

Does the Rule Apply to Me, and What Do I Need to Worry About ?

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Rule Applicability

- ◆ Applies to boilers and process heaters *if located at a HAP major source*
- ◆ Exemptions apply to (§63.7491):
 - Boilers or process heaters covered under other MACTs (i.e., under 40 CFR 63, Subpart MM)
 - Hot water heaters
 - Waste heat boilers (HRSG)
 - Temporary liquid/gas boilers (on site <180 days)
 - Electric utility steam generating unit (>25 MW electrical output and generates electricity for sale)
 - Cogeneration units (>25 MW and >1/3 of its potential output to the grid)



Boiler Definition (§63.7575)

“Boiler means an enclosed device using controlled flame combustion and having the primary purpose of recovering thermal energy in the form of steam or hot water. Waste heat boilers are excluded from this definition.”



Process Heater Definition (§63.7575)

“Process heater means an enclosed device using controlled flame, that is not a boiler, and the unit’s primary purpose is to transfer heat indirectly to a process material (liquid, gas, or solid) or to a heat transfer material for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not directly come into contact with process materials.”



What is a Major Source?

“Major source means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year of any combination of hazardous air pollutants...” (§63.2)



Applicable?—Example

◆ Three natural gas-fired boilers	10 tpy of HAP
◆ Four diesel-fired generators	12 tpy of HAP
◆ Six spray paint booths	3 tpy of HAP
◆ Maintenance operations	2 tpy of HAP
◆ Miscellaneous	1 tpy
◆ TOTAL	28 tpy of HAP



Synthetic Minors

- ◆ Boiler MACT applies to *major sources* of HAPs only
- ◆ A facility that has the potential to be a major source may agree to federally enforceable limits on emissions to become an *area source* and avoid MACT (synthetic minor)
- ◆ Timing—Facility has up to the “first substantive compliance date” to become a minor source (September 13, 2007)



What If My Area Source Becomes Major?

◆ If you are currently a *minor source* and increase emissions to become a major source:

- The new boiler or process heater or reconstructed existing boiler must be in compliance with new source standards upon start-up
- For existing boilers and process heaters at a now major source, you must comply with existing source requirements within 3 years after becoming major (§63.7495)



How Do I Tell If My Unit Is New or Existing?

- ◆ New Units—A boiler/process heater is new if it is located at a major source and construction/reconstruction began after January 13, 2003; comply by November 12, 2004, or start-up, whichever is later
- ◆ Existing Units—All other boilers/process heaters located at a major source are subject to existing source MACT requirements (§63.7490); comply by September 13, 2007



Compliance Options

- ◆ Meet emission limits at the stacks
- ◆ Conduct fuel analyses
- ◆ Emissions averaging
- ◆ Health-based HCl and total selected metals (TSM) alternatives



Regulated Pollutants

- ◆ Four hazardous air pollutant (HAP) categories:
- ◆ Solid HAP metals
 - Particulate matter (PM)
 - Alternative—TSM
 - ◆ Eight HAP metals—arsenic, beryllium, cadmium, chromium, lead, manganese, nickel, selenium
- ◆ Inorganic HAPs—hydrogen chloride (HCl)
- ◆ Mercury—no surrogate, volatile, environmental significance
- ◆ Organic HAPs—carbon monoxide (CO)

PM (TSM) Emission Limits (lb/MMBtu)



Fuel	Size/Use					
	Small		Limited Use		Large	
	New	Existing	New	Existing	New	Existing
Gas	—	—	—	—	—	—
Liquid PM	0.03	—	0.03	—	0.03	—
Solid PM	0.025	—	0.025	0.21	0.025	0.07
TSM	0.0003	—	0.0003	0.004	0.0003	0.001

HCl Emission Limits (lb/MMBtu)



Fuel	Size/Use					
	Small		Limited Use		Large	
	New	Existing	New	Existing	New	Existing
Gas	—	—	—	—	—	—
Liquid	0.0009	—	0.0009	—	0.0005	—
Solid	0.02	—	0.02	—	0.02	0.09

Mercury Emission Limits (lb/MMBtu)



Fuel	Size/Use					
	Small		Limited Use		Large	
	New	Existing	New	Existing	New	Existing
Gas	—	—	—	—	—	—
Liquid	—	—	—	—	—	—
Solid	3.0E-6	—	3.0E-6	—	3.0E-6	9.0E-6

CO Emission Limits (ppm)



Fuel	Size/Use		
	Small	Limited Use	Large
	New	New	New
Gas	—	400 @ 3% oxygen	400 @ 3% oxygen
Liquid	—	400 @ 3% oxygen	400 @ 3% oxygen
Solid	—	400 @ 7% oxygen	400 @ 7% oxygen



Health-based Compliance Options

- ◆ §112(d)(4): “With respect to pollutants for which a health threshold has been established, the Administrator may consider such threshold level, with an ample margin of safety, when establishing emission standards under this subsection.”
- ◆ Authority used in earlier MACTs (pulp and paper)
- ◆ Used for HCl and manganese/TSM



Who Is Eligible?

- Large solid fuel-fired existing sources (not oil fired)*
- New and reconstructed solid fuel sources
- Affected source—burn any amount of solid fuel

*Every source must be included in the risk assessment (gas, liquid, or solid)



HCl Health-Based Option

- ◆ Alternative to HCl emission limit
- ◆ Model risks from HCl equivalent (HCl and chlorine gas)
- ◆ If the maximum hazard index is less than 1.0, then complete risk demonstration



TSM Health-Based Option

- ◆ Alternative to TSM limit based on eight metals (in lieu of PM limit)
 - Arsenic, cadmium, beryllium, lead, chromium, nickel, selenium, and manganese
- ◆ First Step:
 - Model risks from manganese
 - If health based criteria met then second step
- ◆ Second Step:
 - Total mass of remaining seven metals (excluding manganese) must be below 0.001-lb/MMBtu limit (existing) or 0.0003 lb/MMBtu (new)
 - If yes, then complete risk demonstration



Health-Based Compliance Alternatives Demonstration Requirements

- ◆ Boiler and fuel specifications
- ◆ Emissions test reports
- ◆ Controlling factors
- ◆ Source parameters and site information
- ◆ Details of low-risk demonstration analysis;
look-up tables or site-specific risk
assessment
- ◆ Title V permit modification
- ◆ Self-certification



Testing Requirements

- ◆ Facilities will be subject to the following testing and performance evaluation requirements:
 - Annual stack tests
 - Fuel analyses (initially and every 5 years thereafter, or when changing fuels)
 - Monitoring system performance evaluations (immediately prior to performance tests)



Compliance Monitoring

- ◆ Continuous compliance will be measured based on *operating limits* established during your initial performance test:
 - Fuel (will require monthly records)
 - Opacity (will require continuous opacity monitors)
 - Control device parameters (for scrubbers, baghouses, electrostatic precipitators, etc.)
 - CO, new units only (will require CEMs for units >100 million Btu/hour)



The §112 General Provisions

- ◆ Sources subject to any MACT standard need to be very aware of the General Provisions (Part 63, Subpart A) requirements, including
 - Record-keeping and reporting
 - Start-up, shutdown, and malfunction (SSM) plans
 - Maintenance of control and monitoring equipment



Are There Any Limits on My Obligations?

- ◆ Following sources subject **only** to an Initial Notification
 - Existing large and limited use liquid and gaseous fuel units
 - New small liquid fuel units not burning residual oil
- ◆ Following **not** subject to Initial Notification or General Provision requirements (though should keep documentation on file)
 - Existing small gaseous, liquid, and solid fuel units
 - New small gaseous fuel units



Key Timelines

- ◆ March 12, 2005—Initial notification
- ◆ September 13, 2006—If using health-based approach, submit demonstration
- ◆ February 13, 2007—Submit emissions averaging plan
- ◆ July 13, 2007—Submit fuel analysis plan
- ◆ **September 13, 2007**—In compliance (all controls, monitors in place and operational)
- ◆ February 11, 2008—Notification of initial performance test
- ◆ March 11, 2008—Conduct initial performance test
- ◆ May 11, 2008—Notification of compliance status
- ◆ July 31, 2008—First semiannual report
- ◆ March 11, 2009—Conduct subsequent performance test